

CAPCELL PAK C₈ DD (Double Durability)



CAPCELL PAK C₈ DD, Different performances from those of conventional C₈ phases

Alkyl groups attached to silica-based packing material are cleaved when used in an acidic mobile phase for a long period of time. When used in a basic mobile phase, the silica support dissolves thus destroying the column. Durability of reversed phases has a tendency to decrease as the length of the alkyl group decreases. CAPCELL PAK C₈ DD (Double Durability) is a column with unparalleled acidic and basic resistance. The high surface polarity and smaller hydrophobicity, compared to C₁₈ columns, make this product the best choice for short-time analysis of mixtures with diverse hydrophobicities.

Excellent durability (pH range : 1.5 – 10)

Excellent Acidic resistance

Acidic resistance depends on the concentration of the organic content in a mobile phase. It is known that the higher the concentration of the organic content is, the more difficult it is to cleave the Si-C bond. The test method here uses a mobile phase of pH 1 with no organic solvent, thus representing an extremely harsh acidic condition.

*Acidic resistance test conditions

Mobile phase	: (A) 2 vol% TFA, H ₂ O, pH1 (B) 2 vol% TFA, CH ₃ CN B 65% (20min)>0% (60min) >98% (5min)>65% (5min)
Flow rate	: 1.0 mL/min
Temperature	: 60 °C
Detection	: UV 254 nm
Sample	: Uracil, amylbenzene

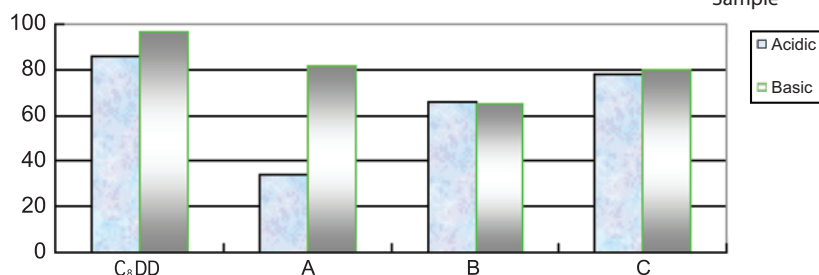
Excellent Basic resistance

Silica is not hydrolysed under acidic conditions, but unstable under neutral to basic conditions. The test method uses a mobile phase of pH 10 which represents an extremely harsh basic condition.

*Basic resistance test conditions

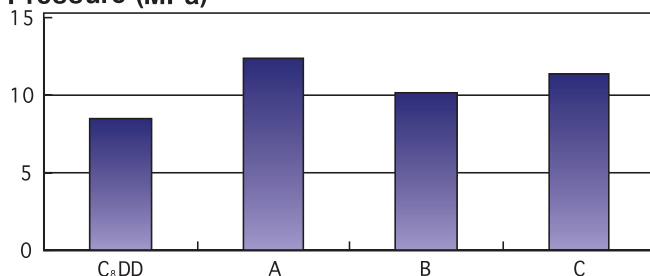
Column	: 4.6mm i.d. x150mm
Mobile phase	: 4 mmol/L Na ₂ B ₄ O ₇ /CH ₃ CN=90/10, pH 10.0
Flow rate	: 1.0 mL/min
Temperature	: 50 °C
Detection	: UV 254 nm
Sample	: Uracil, amylbenzene

Durability (%)



Low back pressure

Pressure (MPa)



Conditions

Column	: 4.6mm i.d. x150mm
Mobile phase	: H ₂ O/CH ₃ CN=50/50
Flow rate	: 1.0 mL/min
Temperature	: 40°C

Excellent peak shape of basic compounds

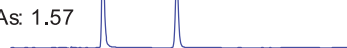
The polymer coating technology used for CAPCELL PAK C₈ DD resulted in showing excellent peak shapes for basic compounds. The figure down on the left is the comparison with other columns in "pyridine/phenol test", an evaluation method commonly used for silanol effects. A good separation was also obtained for five tricyclic antidepressants, highly basic compounds (down, left).

Pyridine/phenol test

As: 1.02



As: 1.57



As: 1.36

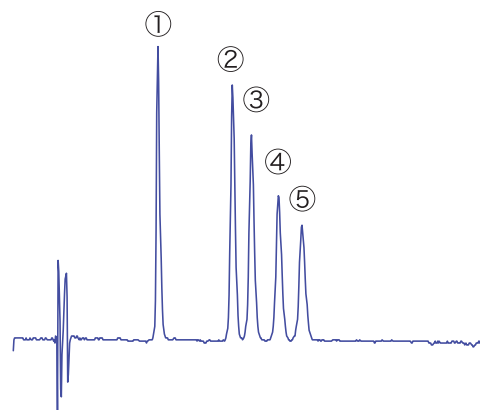


As: 2.61



Condition
 Column : Capcell Pak C₈ DD S5
 4.6 mm i.d. x150mm
 Mobile phase : H₂O/CH₃CN=30/70
 Flow rate : 1.0 mL/min
 Temperature : 40 °C
 Samples : 1) Pyridine 2) Phenol

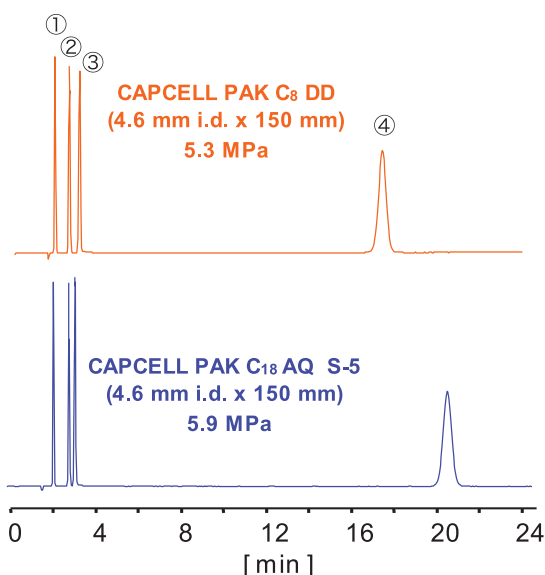
Analysis of tricyclic antidepressants



Column : Capcell Pak C₈ DD S5
 4.6 mm i.d. x150mm
 Mobile phase : 0.1 vol% HCOOH,
 CH₃CN/H₂O=25/75
 Flow rate : 1.0 mL/min
 Temperature : 40 °C
 Detection : UV 254 nm
 Samples : 1) Doxepine 2) Desipramine
 3) Imipramine 4) Nortriptyline
 5) Amitriptyline

Suitable for quickly separating mixtures with diverse hydrophobicity

This is a comparison between CAPCELL PAK C₁₈ AQ, and CAPCELL PAK C₈ DD column. Due to large hydrophobicity corresponding to the long functional group, CAPCELL PAK C₁₈ AQ requires more time to elute ibuprofen that has a relatively high hydrophobicity. On the other hand, C₈ DD column, with its low hydrophobicity, is capable of separating the sample in a much shorter time. In addition, because of the high surface polarity that is equivalent to that of the C₁₈ AQ, highly polar samples are effectively retained.



1, Caffeine
 2, Ethenzamide
 3, Bromovalerylurea
 4, Ibuprofen

Mobile phase : CH₃OH/H₂O = 60/40, 0.1 H₃PO₄
 Flow rate : 1.0mL/min
 Detection : UV 220 nm
 Temperature : 40 °C

